T874G,R Multistage Heat Pump Thermostats and Q674F,J,L Subbases

INSTALLATION INSTRUCTIONS

APPLICATION

The T874G,R Thermostats with Q674F,J,L Subbases provide 24 to 30 Vac control of a two-stage heating/one-stage cooling heat pump system. See Table 1 for thermostat/subbase specifications.

Table 1. Thermostat/Subbase Specifications.

Thermostat/Subbase	Switching		Changeover
	System	Fan	
T874G/Q674F	OFF-EM.HT.-HEAT-AUTO-COOL	AUTO-ON	Auto and Manual
T874G/Q674J	EM.HT.-AUTO-OFF	AUTO-ON	Auto
T874R/Q674L	EM.HT.-HEAT-OFF-COOL	AUTO-ON	Manual

OPERATION

On a two-heat thermostat, the two stages of heat *make* sequentially as the temperature drops. *Make* refers to the mercury switch initiating a call for heat or cool.

There are about 2°F (1°C) between stages so that the second stage makes only when the first stage cannot handle the load. This is the *interstage differential*.

LEDs (light emitting diodes) are included on your subbase. Refer to the list below for specific meaning.

The CHECK LED lights when something needs to be checked or done to maintain efficient operation of the system. See your heating system instructions for the specific meaning.

The SYSTEM LED lights when the system is calling for heating or cooling.

The AUX. HT. LED lights when the auxiliary heat (second stage) is operating. Auxiliary heat operates when the heat pump alone cannot handle the load.

The EM. HT. LED lights when the system switch is placed in the EM. HT. position. Emergency heat is operating; in most systems, the compressor has failed and the heat pump is not operating.

LEDs are not field replaceable or addable.

RECYCLING NOTICE

This control contains mercury in a sealed tube. Do not place the control in the trash at the end of its useful life.

If this control is replacing a control that contains mercury in a sealed tube, do *not* place your old control in the trash.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of this control, or of an old control containing mercury in a sealed tube.

INSTALLATION

When Installing this Product…

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

⚠ CAUTION

1. Disconnect power supply to prevent electrical shock or equipment damage.
2. Run wires as close as possible to the subbase. To prevent interference with the thermostat linkage, keep wire length to a minimum. Push excess wire back into the hole and plug the hole to prevent drafts from affecting the thermostat operation.
3. Do not overtighten the thermostat captive mounting screws because damage to the subbase threads can result.
4. Do not short across coil terminals on relay; this can burn out the heat anticipator.

Location

Install the thermostat about 5 ft (1.5m) above the floor in an area with good circulation at room temperature.

Do not install the thermostat where it can be affected by:
— drafts, or dead spots behind doors and in corners.
— hot or cold air from ducts.
— radiant heat from sun or appliances.
— concealed pipes and chimneys.
— unheated (uncooled) areas such as an outside wall behind the thermostat.

Mounting the Subbase

The thermostat subbase can be mounted on a vertical outlet box, horizontal outlet box, or directly on the wall.

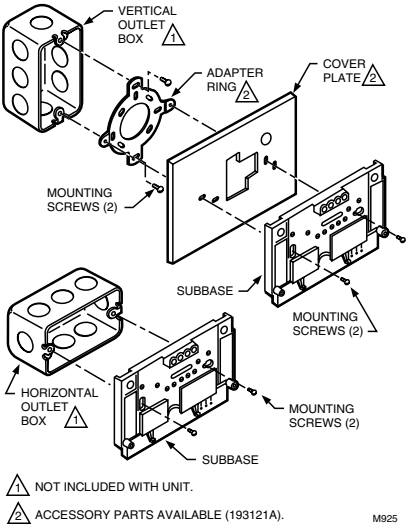

Fig. 1. Installation of subbase on outlet box.

❶ If you must mount the subbase on a vertical outlet box, order part no. 193121A Adapter Assembly. See Fig. 1. The assembly includes an adapter ring, two screws, and a cover plate to cover marks on the wall. Install the ring and cover plate on the vertical outlet box.

For a wall installation, hold the subbase in position and mark holes for the anchors. See Fig. 2. Obtain wall anchors locally. Take care that the wires do not fall back into the wall opening. Set aside the subbase. Drill four 3/16 in. (5 mm) holes and gently tap anchors into the holes until flush with the wall.

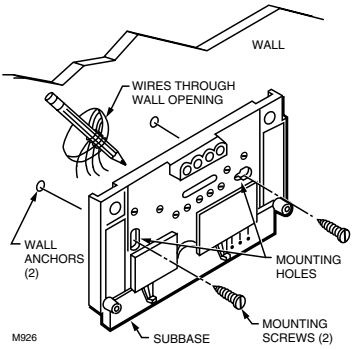

Fig. 2. Installation of subbase on wall.

❷ Pull wires through the cover plate (if used) and subbase cable opening. See Fig. 12.
❸ Secure the cover plate (if used) and subbase with the screws provided. Do not fully tighten the subbase screws.
❹ Level the subbase using a spirit level, as shown in Fig. 11, and firmly tighten the subbase mounting screws. The subbase mounting holes provide for minor out-of-level adjustments.

IMPORTANT

An incorrectly leveled subbase will cause the temperature control to deviate from setpoint.

Wiring the Subbase

All wiring must comply with local electrical codes and ordinances. Follow the equipment manufacturer wiring instructions when available. To wire the subbase, proceed as follows:

❶ Connect system wires to the subbase. See Fig. 3 through 11. A letter code is located near each terminal for identification. The terminal barrier permits straight or conventional wraparound wiring connection (Fig. 13).
❷ Firmly tighten each terminal screw.
❸ Fit wires as close as possible to the subbase. Push excess wire back into the hole.
❹ Plug the hole with nonflammable insulation to prevent drafts from affecting the thermostat.

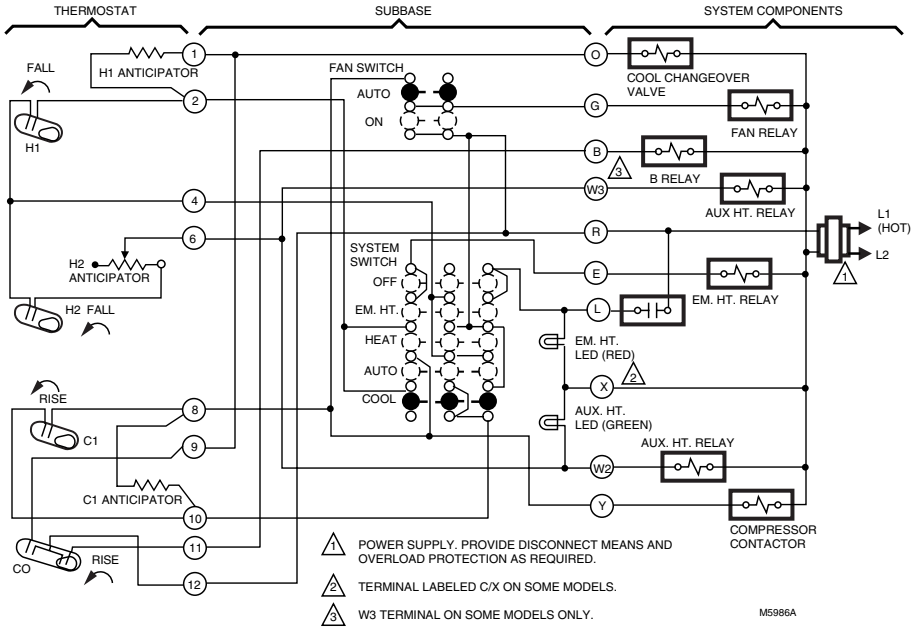

Fig. 3. Internal schematic and typical hookup for T874G/Q674F in heat pump system. Includes AUX. HT. and EM. HT. LEDs.

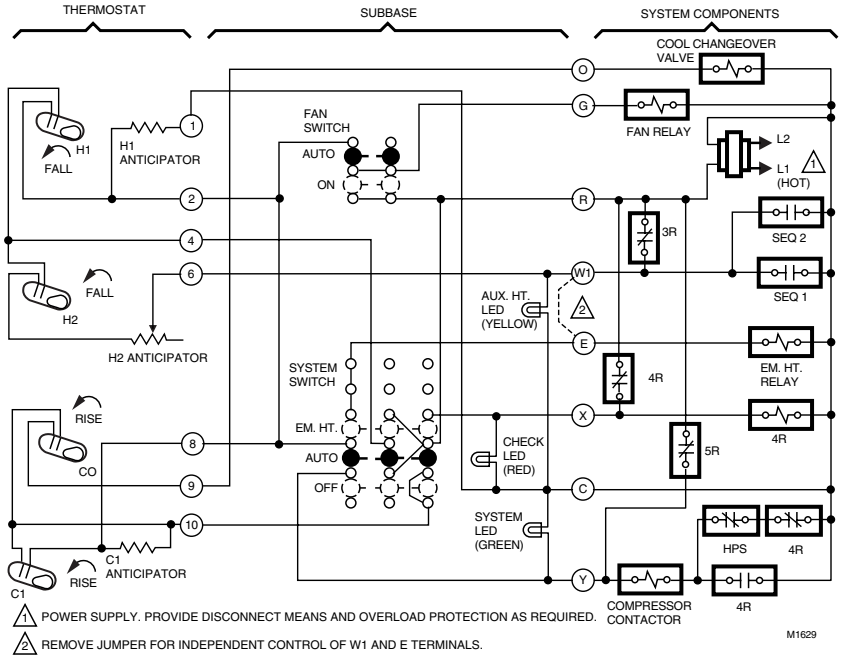

Fig. 4. Internal schematic and typical hookup for T874G/Q674J in heat pump system. Includes AUX. HT., CHECK and SYSTEM LEDs.

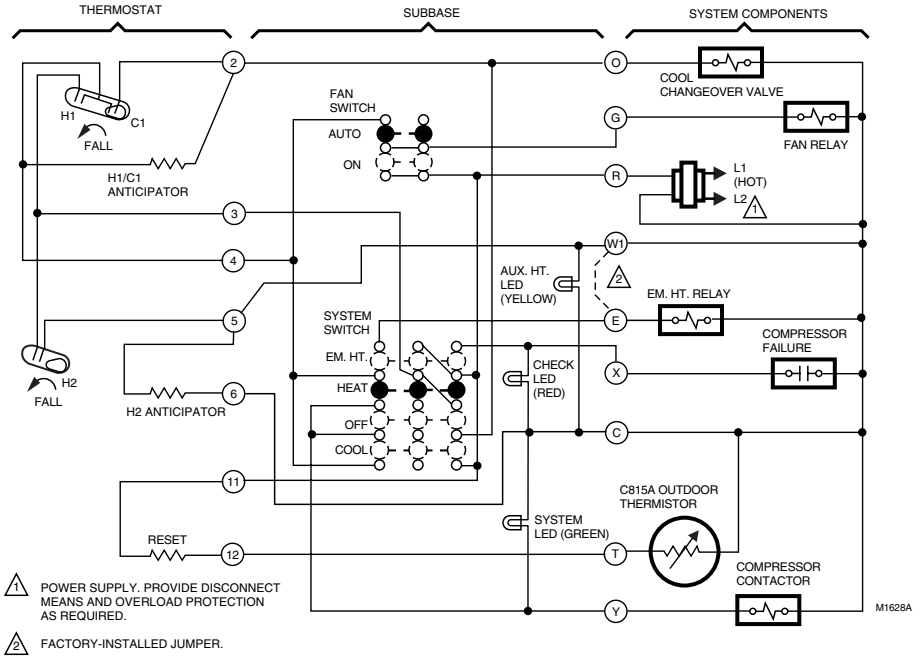

Fig. 5. Internal schematic and typical hookup for T874R/Q674L in heat pump system with outdoor reset. Includes AUX. HT., CHECK and SYSTEM LEDs.

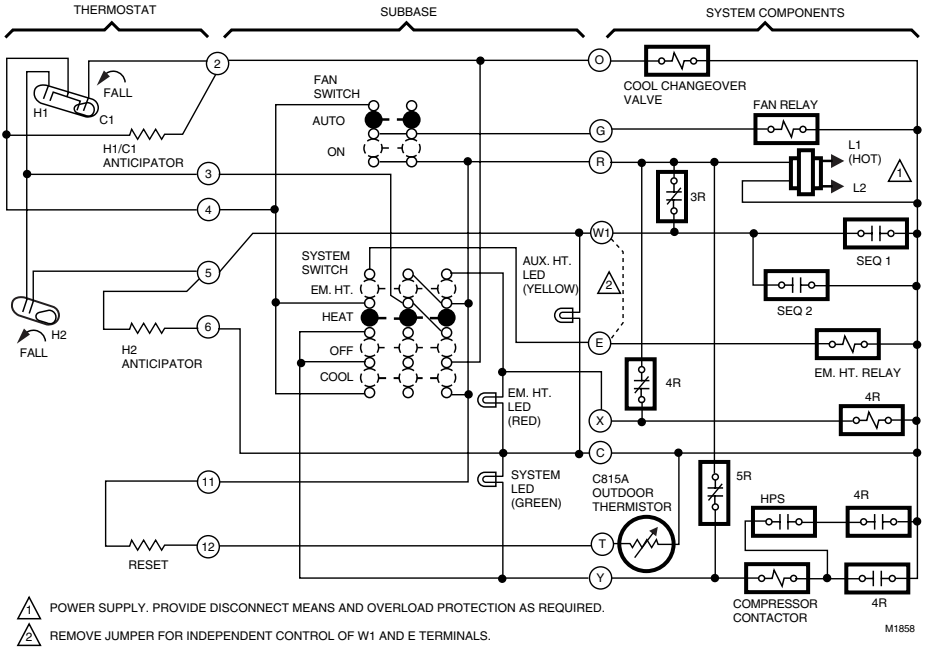

Fig. 6. Internal schematic and typical hookup for T874R/Q674L in heat pump system with outdoor reset. Includes AUX. HT., EM. HT. and SYSTEM LEDs.

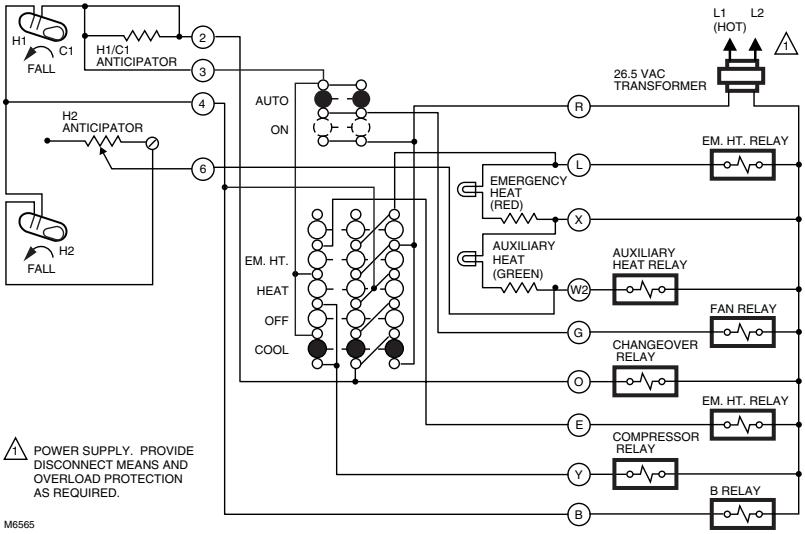

Fig. 7. Internal schematic and typical hookup for T874R/Q674L in heat pump system. Includes EM. HT and AUX. HT. LEDs.

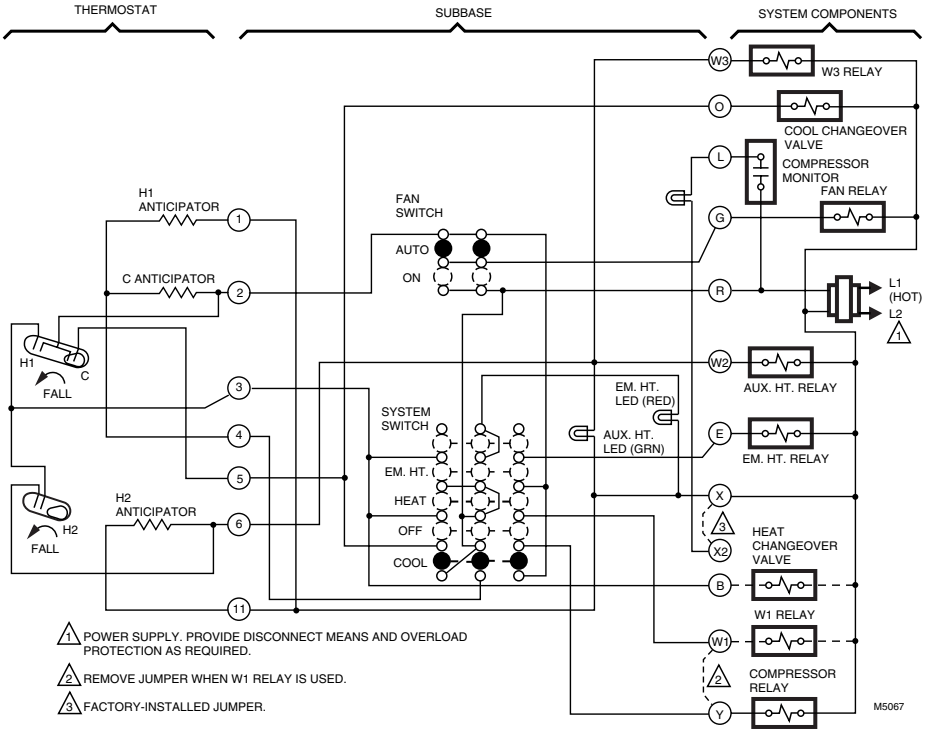

Fig. 8. Internal schematic and typical hookup for T874R/Q674L in heat pump system. Includes CHECK, EM. HT. and AUX. HT. LEDs.

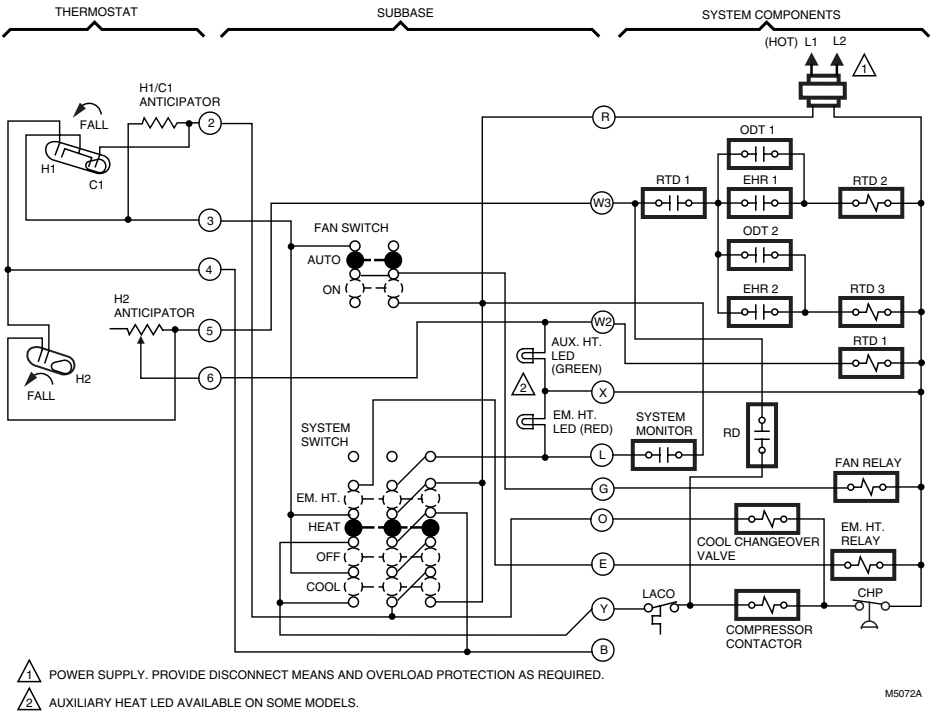

Fig. 9. Internal schematic and typical hookup for T874R/Q674L in heat pump system. Includes EM. HT. and AUX. HT. LEDs and W3 terminal for additional heat stage.

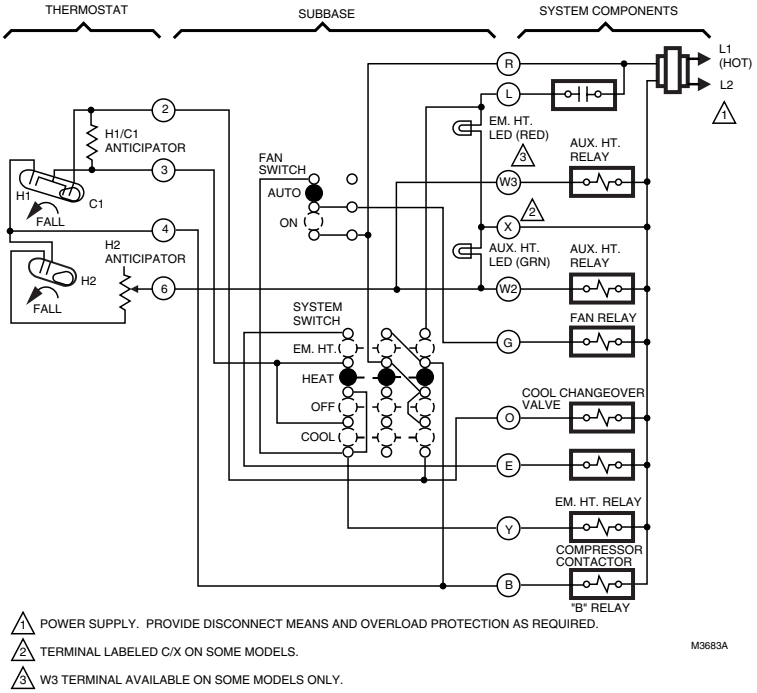

Fig. 10. Internal schematic and typical wiring diagram for T874R/Q674L in heat pump system. Includes EM. HT. and AUX. HT. LEDs.

Mounting the Thermostat

❶ Remove the thermostat cover by pulling the bottom edge of the cover outward and away from the base until it snaps free of the retaining posts.

NOTE: The cover is hinged at the top and must be removed by pulling the bottom edge outward and away from the base.

❷ Carefully remove and discard the polystyrene packing insert that protects the mercury switches during shipment.

❸ Turn over the thermostat base and note the spring fingers that engage the subbase contacts. Make sure the spring fingers are *not* bent flat, preventing proper electrical contact with the subbase.

❹ Note the tabs along the top inside edge of the thermostat base. The tabs fit into the corresponding slots on the top of the subbase. Mount the thermostat on the subbase.

❺ Align the two captive mounting screws in the thermostat base with the posts on the subbase. See Fig. 14. Tighten both screws. *Do not overtighten screws* or damage to subbase can result.

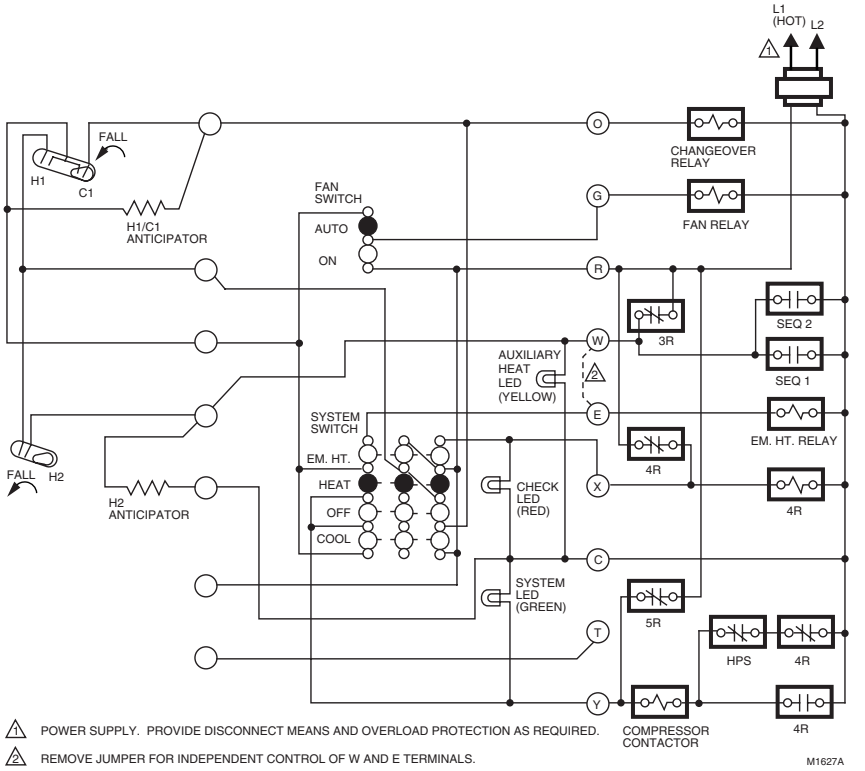

Fig. 11. Internal schematic and typical hookup for T874R/Q674L in heat pump system. Includes AUX. HT., CHECK and SYSTEM LEDs.

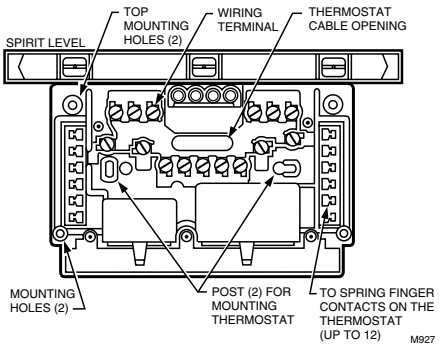

Fig. 12. Subbase components and leveling procedure.

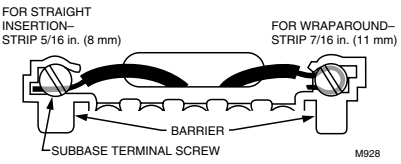

Fig. 13. Wiring connections.

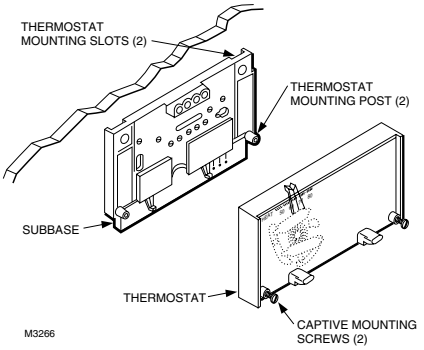

Fig. 14. Mounting thermostat on subbase.

SETTING

Temperature Setting

The T874R has one setpoint lever that controls both heating and cooling. The T874G has one lever that controls heating and another lever that controls cooling. Move the setpoint lever(s) to the desired control position(s).

Subbase Setting

System switching positions control thermostat operation as follows:

EM. HT.: Emergency heating system is energized. Cooling system is off. Compressor is de-energized.

HEAT: Heating system is controlled by the thermostat. Cooling system is off.

OFF: Both the heating and cooling systems are off.

COOL: Cooling system is controlled by the thermostat. Heating system is off.

AUTO: Thermostat automatically changes between heat and cool modes depending on indoor temperature.

Fan switching positions control fan operation as follows:

ON: Fan operates continuously.

AUTO: Fan operates with equipment as controlled by the thermostat.

To switch positions, use your thumb and index finger to slide the lever to the desired position. The switch lever must be set directly over the desired function indicator mark for proper circuit operation.

CHECKOUT

Heating

Move the system switch on the subbase to HEAT and the fan switch to AUTO. Move the setpoint lever (heating lever on T874G) on the thermostat about 10°F (6°C) above the room temperature. Heating and fan should start if there is no time delay or outdoor temperature limiting system. Move the lever (heating lever on T874G) about 10°F (6°C) below the room temperature. Heating and fan should shut off.

Cooling

CAUTION

Do not operate cooling if outdoor temperature is below 50°F (10°C). Refer to manufacturer recommendations.

Move the system switch on the subbase to COOL. Move the setpoint lever (cooling lever on T874G) on the thermostat about 10°F (6°C) below the room temperature. Cooling and fan should start. Move the lever (cooling lever on T874G) about 10°F (6°C) above the room temperature. Cooling and fan should stop.

Emergency Heat

Move the system switch on the subbase to EM. HT. Move the setpoint lever (heating lever on T874G) about 10°F (6°C) above the room temperature. The electric strip heater(s) should come on. Move the lever (heating lever on T874G) about 10°F (6°C) below the room temperature. The electric strip heater should de-energize.

Fan

Move the subbase system switch to OFF, and the fan switch to ON. The fan should run continuously. When the fan switch is in the AUTO position, fan operation is controlled by the heating or cooling system.

Outdoor Reset Thermistor

Some systems are supplied with a Honeywell C815A1005 Thermistor for outdoor mounting. The thermistor must be used; if not, thermostat performance will deviate radically from proper operation.

The proper thermistor operation must be verified to assure the correct operation of the thermostat. Check thermistor operation as follows:

1. Disconnect the T wire on the subbase.
2. Use an ohmmeter to measure resistance between the T wire and the transformer secondary common or C terminal.
3. Take outdoor temperature at thermistor location and find the correct thermistor resistance on chart in Fig. 15.
4. If the resistance measured in step 2 and the calculated resistance in step 3 vary by more than 15 percent, the thermistor requires replacement. Contact the installation dealer for an outdoor thermistor replacement.

CALIBRATION

Thermostat

These thermostats are accurately calibrated at the factory. They do not have provision for field calibration.

Thermometer

The thermometer in your thermostat has been accurately calibrated at the factory. The thermometer should only need adjustment if it has been dropped or jarred.

If the setpoint lever setting and the thermometer reading do not agree, follow the procedure below.

1. Remove thermostat cover by pulling the bottom edge of the cover outward and away from the base until it clears the retaining posts.
2. Set the cover on a table near an accurate thermometer.
3. After allowing five or ten minutes for stabilization, compare the readings. If they are the same, replace cover and put system into operation. If they are different, recalibrate the thermostat thermometer; see step 4.

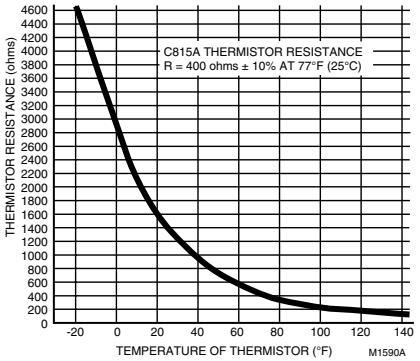

Fig. 15. Thermistor resistance chart.

4. Insert a small screwdriver in the thermometer shaft (Fig. 16) and turn it until the thermometers read the same. When the thermometer is calibrated, replace cover and place into operation.

NOTE: Radiant heat from your hands will offset the thermometer reading. After making each adjustment, wait five or ten minutes for the thermometer to stabilize before comparing.

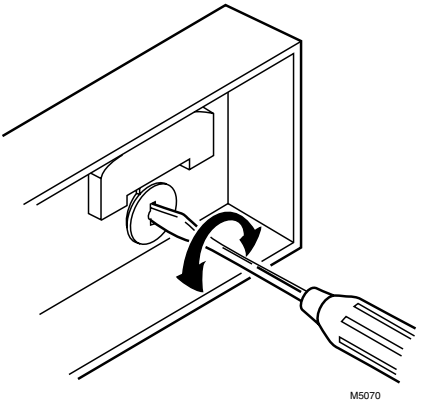

Fig. 16. Thermometer calibration.

Honeywell

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